


SHAW, D. et al.
Serial No. **unknown**

REMARKS

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 
Gary R. Tanigawa
Reg. No. 43,180

GRT:ecb
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100



VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Page 1, before the first line, please insert as a separate paragraph:

This application is the US national phase of international application PCT/GB00/03575 filed 18 September 2000, which designated the US.

IN THE CLAIMS

3. A vaccine according to claim 1 ~~or 2~~ wherein the heterologous antigen can induce immunogenicity against a pathogenic microorganism, optionally a heterologous antigen specific for a mucosa colonising pathogen or pathogen entering the body via the mucosa, such as via the oral route.

4. A vaccine according to ~~any of the preceding claims 1~~ wherein the heterologous antigen induces immunogenicity against a pathogenic microorganism colonising the gastrointestinal tract.

5. A vaccine according to ~~any of the preceding claims 1~~ wherein the pathogenic microorganism is herpes virus, rubella virus, influenza virus, mumps virus, measles virus, poliomyelitis Virus, rotavirus, respiratory syncytial virus, *Campylobacter* species, *Chlamydial* organisms, species of the genus *Cryptosporidium*, cytomegalovirus, human immunodeficiency virus, *Actinomyces* species, *Entamoeba histolytica*, arenaviruses, arboviruses, *Clostridium botulinum*, species of the genus *Candida*, *Vibrio*

cholera, *Cryptococcus neoformans*, EHEC strains of *E.coli* O157:H7, O26:H11, O111:H8 and O104:H21, ETEC strains of *E.coli*, strains of *E. coli* shown to possess enteroinvasiveness (EIEC), EPEC strains of *E.coli* EAaggEC strains of *E.coli*., DAEC strains of *E.coli*, filoviridae, parvovirus, *Filarioidea*, *Staphylococcus aureus*, species of the genus *Clostridium perfringens*, *Helicobacter pylori*, Caliciviruses, *Giardia lamblia*, *Neisseria gonorrhoeae*, hantaviruses, hepatitis viruses types A, B, C, D, E, *Legionellae* strains, *Mycobacterium leprae*, *Listeria monocytogenes*, species of the genus *Clostridium perfringens*, *Borrelia burgdorferi*, *Pseudomonas pseudomallei*, Epstein Barr virus, *Onchocerca volvulus*, Poxvirus, *Bordetella pertussis*, *Yersinia pestis*, *Coxiella burnetti*, rabies virus, *Treponema pallidum*, *Mycobacterium tuberculosis*, *Salmonella typhi*, a (eukaryotic parasite) causing malaria, *pneumocystis pneumonia*, an agent causing toxoplasmosis, or any combination thereof.

6. A vaccine according to ~~any preceding claim~~ 1 which elicits a protective response against a rotavirus, respiratory syncytial virus, *Mycobacterium tuberculosis*, human immunodeficiency virus, *E.coli*, *Vibrio cholera*, streptococci and/or chlamydia.

7. A vaccine ~~according to any of the preceding claims~~ 1 wherein the heterologous antigen is a viral and/or bacterial antigen optionally a (gp 160) envelope protein of the HIV virus, a surface glycoprotein of a *Leishmania* parasite, Shiga-like toxin, *Shigella* lipopolysaccharide antigen, *Escherichia coli* fimbrial antigen, a CFA

SHAW, D. et al.

Serial No. unknown

antigen of an enterotoxigenic *Escherichia coli* strain, anthrax toxin, pertussis toxin, tetanus toxin.

8. A vaccine according to ~~any of claims 1-4~~ wherein the heterologous antigen is a human allergen or the heterologous antigen is specific for tetanus.

9. A vaccine according to ~~any of the preceding claims 1~~ which can induce protective immunogenicity.

10. A vaccine according to ~~any of the preceding claims 1~~ formulated as a single dose vaccine.

11. A vaccine according to ~~any of the preceding claims 1~~ wherein the recombinant *Lactobacillus plantarum* expresses the heterologous antigen intracellularly and/or on the cell surface to a degree exceeding that of *Lacto bacillus plantarum* 80 expressing β -galactosidase.

12. A vaccine according to ~~any of the preceding claims 1~~ wherein the recombinant *Lacto bacillus plantarum* comprises a homologous expression and/or secretion signal, optionally in an expression vector for *Lactobacilli*, preferably for *Lacto bacillus plantarum*.

13. A vaccine according to ~~any of the preceeding claims~~ 1 wherein the recombinant *Lacto bacillus plantarum* strain exhibits a persistence (in the individual vaccinated) exceeding 5 days, preferably exceeding 9 days, suitably more than 15 or even 20 days

14. A vaccine according to ~~any of the preceeding claims~~ 1 wherein the recombinant *Lactobacillus plantarum* exhibits a persistence longer than that of *L plantarum* 80, preferably longer than that of *L plantarum* NCIMB 8826, under equivalent conditions.

15. A vaccine according to ~~any of the preceeding claims~~ 1 formulated administration to a human, such as an infant, immunocompromised person, elderly person or a normally healthy infant, child or adult.

16. A vaccine according to ~~any of the preceeding claims~~ 1 wherein the recombinant *Lactobacillus plantarum* is a recombinant *Lactobacillus plantarum* 256.

17. A vaccine according to ~~any of the preceeding claims~~ 1 wherein the vaccine comprises at least one adjuvant or a pharmacologically acceptable carrier.

18. A recombinant *Lactobacillus plantarum*, optionally a recombinant strain of *Lactobacillus plantarum* 256, as defined in ~~any of the preceeding~~ vaccine claims 1.

23. A *Lactobacillus* organism according to ~~any of claims 18 to 22~~ which is *L. plantarum* or is for use in a vaccine.

25. A bacterium according to ~~any of claims 19 to 24~~ for use in a method of prophylaxis or treatment of the human or animal body.

28. The use of a bacterium according to ~~any of claims 19 to 24~~ in the manufacture of a vaccine.

30. The use according to ~~any of claims 26 to 29~~ for treating or preventing tetanus.